AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method of treating a surface of a semiconductor substrate, said surface of said semiconductor substrate including at least any one of a copper region, a copper based region and a copper alloy region, said method comprising the steps of:

removing ~~metal contaminations~~ CuOx from said surface and simultaneously or subsequently carrying out an anti-corrosion treatment by exposing said surface of said semiconductor substrate to a solution containing an anti-corrosive agent; and

subsequently, separately forming a copper-diffusion stopper insulating film over said surface of said semiconductor substrate.

2. (original) The method as claimed in claim 1, wherein said surface of said semiconductor substrate includes at least one of a copper interconnection, a copper based interconnection and a copper alloy interconnection which are formed in a damascene method.

3. (original) The method as claimed in claim 1, wherein said anti-corrosion treatment is carried out in a

cleaning process after a chemical mechanical polishing process is carried out to said surface of said semiconductor substrate.

4. (canceled).

5. (canceled).

6. (canceled).

7. (currently amended) The method as claimed in claim [[6]] 1, wherein said cleaning solution comprises a carboxylic acid based cleaning solution.

8. (currently amended) The method as claimed in claim [[6]] 1, wherein said anti-corrosive agent comprises at least one of hetero-cyclic compounds and derivatives thereof.

9. (original) The method as claimed in claim 8, wherein said anti-corrosive agent comprises at least one selected from the groups consisting of four-membered hetero-cyclic compounds having two nitrogen atoms, five-membered hetero-cyclic compounds having three nitrogen atoms, six-membered hetero-cyclic compounds having three nitrogen atoms and derivatives thereof.

10. (original) The method as claimed in claim 9, wherein one of said four-membered hetero-cyclic compounds comprises indazole.

11. (original) The method as claimed in claim 9, wherein a plurality of said five-membered hetero-cyclic compound comprise benzotriazole, o-tolyltriazole, m-tolyltriazole, p-

tolyltriazole, carboxybenzotriazole, 1-hydroxybenzotriazole, nitrobenzotriazole, and dihydroxypropylbenzotriazole.

12. (original) The method as claimed in claim 1, wherein said anti-corrosive agent is contained in the range of 1 ppm to 5%.

13. (original) The method as claimed in claim 1, wherein said anti-corrosive agent comprises at least one of aromatic compounds having benzene-rings and derivatives thereof.

14. (original) The method as claimed in claim 1, wherein said aromatic compounds having benzene-rings comprise gallic acids and tannic acids.

15. (original) The method as claimed in claim 14, wherein at least one of gallic acids and tannic acids is contained in the range of 0.01% to 5%.

16. (original) The method as claimed in claim 1, wherein said copper-diffusion stopper insulating film comprises an Si_3N_4 film.

17. (original) The method as claimed in claim 1, wherein said copper-diffusion stopper insulating film comprises an SiON film.

18. (currently amended) A method of forming a semiconductor substrate having at least an interconnection made of a metal selected from the group consisting of copper, copper-

based materials, and copper alloys, said method comprising the steps of:

carrying out a chemical mechanical polishing (CMP) process for forming said at least interconnection in at least a groove in said semiconductor substrate;

subsequently removing ~~metal contaminations~~ CuOx from a surface of said semiconductor substrate using a cleaning solution and simultaneously or subsequently carrying out an anti-corrosion treatment by exposing said surface of said semiconductor substrate to a solution containing an anti-corrosive agent; and

subsequently, separately forming a copper-diffusion stopper insulating film over said surface of said semiconductor substrate.

19. (original) The method as claimed in claim 18, wherein said anti-corrosion treatment is carried out in a cleaning process after a chemical mechanical polishing process is carried out to said surface of said semiconductor substrate.

20. (canceled).

21. (currently amended) The method as claimed in claim [[20]] 18, wherein said cleaning solution comprises a carboxylic acid based cleaning solution.

22. (canceled).

23. (canceled).

24. (currently amended) The method as claimed in claim [[22]] 21, wherein said anti-corrosive agent comprises at least one of hetero-cyclic compounds and derivatives thereof.

25. (original) The method as claimed in claim 24, wherein said anti-corrosive agent comprises at least one selected from the groups consisting of four-membered hetero-cyclic compounds having two nitrogen atoms, five-membered hetero-cyclic compounds having three nitrogen atoms, six-membered hetero-cyclic compounds having three nitrogen atoms and derivatives thereof.

26. (original) The method as claimed in claim 25, wherein one of said four-membered hetero-cyclic compounds comprises indazole.

27. (original) The method as claimed in claim 25, wherein a plurality of said five-membered hetero-cyclic compound comprise benzotriazole, o-tolyltriazole, m-tolyltriazole, p-tolyltriazole, carboxybenzotriazole, 1-hydroxybenzotriazole, nitrobenzotriazole, and dihydroxypropylbenzotriazole.

28. (original) The method as claimed in claim 18, wherein said anti-corrosive agent is contained in the range of 1 ppm to 5%.

29. (original) The method as claimed in claim 18, wherein said anti-corrosive agent comprises at least one of aromatic compounds having benzene-rings and derivatives thereof.

30. (original) The method as claimed in claim 18, wherein said aromatic compounds having benzene-rings comprise gallic acids and tannic acids.

31. (original) The method as claimed in claim 30, wherein at least one of gallic acids and tannic acids is contained in the range of 0.01% to 5%.

32. (original) The method as claimed in claim 18, wherein said copper-diffusion stopper insulating film comprises an Si_3N_4 film.

33. (original) The method as claimed in claim 18, wherein said copper-diffusion stopper insulating film comprises an SiON film.

34-56 (canceled).

57. (previously presented) The method as claimed in claim 1, wherein said step of carrying out an anti-corrosion treatment comprises flowing the anti-corrosive agent onto the surface of the semiconductor substrate.

58. (previously presented) The method as claimed in claim 57, wherein said step of forming a copper-diffusion stopper insulating film comprises forming the copper-diffusion stopper insulating film by chemical vapor deposition.

59. (previously presented) The method as claimed in claim 58, wherein the copper-diffusion stopper insulating film comprises one of Si_3N_4 film and SiON film.

60. (previously presented) The method as claimed in claim 18, wherein said step of carrying out an anti-corrosion treatment comprises flowing the anti-corrosive agent onto the surface of the semiconductor substrate.

61. (previously presented) The method as claimed in claim 60, wherein said step of forming a copper-diffusion stopper insulating film comprises forming the copper-diffusion stopper insulating film by chemical vapor deposition.

62. (previously presented) The method as claimed in claim 61, wherein the copper-diffusion stopper insulating film comprises one of Si_3N_4 film and SiON film.

63. (currently amended) A method of treating a surface of a semiconductor substrate, said surface of said semiconductor substrate including at least any one of a copper region, a copper based region and a copper alloy region, said method comprising the steps of:

removing ~~metal contaminations~~ CuOx from said surface and simultaneously carrying out an anti-corrosion treatment by exposing said surface of said semiconductor substrate to a solution containing an anti-corrosive agent; and

subsequently, separately forming a copper-diffusion stopper insulating film over said surface of said semiconductor substrate.

64. (previously presented) The method as claimed in claim 63, wherein said semiconductor substrate has at least one interconnection made of a metal selected from the group consisting of copper, copper-based materials, and copper alloys, said method further comprising the step of carrying out a chemical mechanical polishing process for forming said at least one interconnection in at least one groove in said semiconductor substrate prior to said removing metal contaminations step.